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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/018,188	12/18/2001	Naoyuki Koyama	511.40998X00	7930

7590 09/11/2006

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EXAMINER

ELEY, TIMOTHY V

ART UNIT	PAPER NUMBER
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3724

DATE MAILED: 09/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/018,188	<b>Applicant(s)</b> KOYAMA ET AL.	
	<b>Examiner</b> Timothy V. Eley	<b>Art Unit</b> 3724	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 15 August 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1,3-11 and 27-29 is/are pending in the application.
- 4a) Of the above claim(s) 10 and 11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-9 and 27-29 is/are rejected.
- 7) ☒ Claim(s) 6 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

Art Unit: 3724

**DETAILED ACTION**

***Election/Restrictions***

1. Claims 10 and 11 still remain withdrawn since the inventions lack the same technical features since the abrasive of Group I does not have to be used to polish a film on a substrate or semiconductor wafer as required by Group II. Also, the abrasive can be sprayed from a nozzle against a painted surface in order to remove the paint from the surface.

***Claim Objections***

2. Claim 6 is objected to because either --the-- or --said-- should be inserted before "cerium"(line 3). Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1,3,7, and 29 are rejected under 35 U.S.C. 102(e) as being anticipated by Sachan et al(2003/0181046).

- Sachan et al discloses a CMP abrasive for polishing an inorganic insulating film having unevenness on a surface thereof, consisting essentially of cerium oxide particles, a dispersant, water, and, additionally, an organic polymer which is polyvinyl pyrrolidone(applicant's claim 7) having an atom or a structure capable of forming a hydrogen bond with a hydroxyl group present on a surface of the film to be polished, wherein the organic polymer is a compound containing at least one atom having an

Art Unit: 3724

unpaired electron in a molecular structure. In addition, the abrasive is capable of polishing an inorganic insulating film having unevenness on a surface thereof, and wherein the organic polymer is a compound containing at least one atom having an unpaired electron in a molecular structure. See paragraphs 0016,0021, and 0023, and claims 4 and 5.

- Regarding claim 3, since the organic polymer is polyvinyl pyrrolidine, it inherently meets the limitations of claim 3.

***Claim Rejections - 35 USC § 103***

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 4-6,8,9, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sachan et al(2003/0181046).

- Sachan et al is explained above.
- Sachan et al does not specifically disclose the exact adsorption ratios and amount of the organic polymer, nor the exact sedimentation speed of the cerium oxide particles.
- However, the exact adsorption ratios and amount of the organic polymer and the exact sedimentation speed of the cerium oxide particles would have been obvious matters of choice to one having ordinary skill in the art at the time the invention was made since applicant has not disclosed that the exact adsorption ratios and amount of the organic polymer, and the exact

Art Unit: 3724

sedimentation speed of the cerium oxide particles are critical to the invention. Also, one having ordinary skill in the art would choose these variables to produce a desired result in a method of using the abrasive/additive.

7. Claims 1,3-9, and 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sachan et al(2003/0181046), in view of the Japanese'040 reference.

- Sachan et al is explained above.
- In the event that it may be considered that applicant's CMP abrasive must include only cerium oxide particles, the dispersant, water and the organic polymer, it would have been obvious to one having ordinary skill in the art at the time the invention was made that any components in the abrasive of Sachan et al in addition to the cerium oxide particles, the dispersant, water and the organic polymer may be removed, in order to allow the abrasive to be use to abrade insulating film as taught by the Japanese reference(see the abstract).
- Regarding claims 4-6,8,9, and 28, Sachan et al does not specifically disclose the exact adsorption ratios and amount of the organic polymer, nor the exact sedimentation speed of the cerium oxide particles.
- However, the exact adsorption ratios and amount of the organic polymer and the exact sedimentation speed of the cerium oxide particles would have been obvious matters of choice to one having

Art Unit: 3724

ordinary skill in the art at the time the invention was made since applicant has not disclosed that the exact adsorption ratios and amount of the organic polymer, and the exact sedimentation speed of the cerium oxide particles are critical to the invention. Also, one having ordinary skill in the art would choose these variables to produce a desired result in a method of using the abrasive/additive.

- Regarding claim 27, Sachan et al does not disclose that the dispersant is selected from the group consisting of water-soluble anionic dispersants, water-soluble nonionic dispersants, water-soluble cationic dispersants and water-soluble amphoteric dispersants.
- However, the Japanese reference discloses that it is well-known in an abrasive which includes cerium oxide particles an organic polymer to use a dispersant which is a water-soluble anionic dispersant(see abstract).
- Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the abrasive of Sachan et al, by exchanging the dispersant therein with a water-soluble anionic dispersant, as taught by the Japanese reference.

#### **Response to Arguments**

8. Applicant's arguments filed August 15, 2006 have been fully considered but they are not persuasive.

Art Unit: 3724

- Applicant argues that Sachan et al teaches away from polishing an inorganic insulating film having an unevenness on a surface thereof, since it teaches attenuating removable of an oxide film.
  - o First it should be noted that applicant never recites "polishing an oxide film".
  - o Therefore, Sachan et al is capable of polishing an inorganic insulating film having unevenness on a surface thereof, since it may be used to polish silicon nitride or other non-oxide insulating film. Furthermore, Sachan et al is also capable of polishing an oxide film, even if it may be ever so slightly.
- Applicant argues that evidence of unexpectedly better results clearly supports a conclusion of unobviousness of the presently claimed subject matter.
  - o Applicant's unexpectedly better results are based mainly on processes of using the CMP abrasive for a specific purpose of polishing an inorganic insulating film having unevenness on a surface thereof. The process claims are not being examined on the merits, since they have been withdrawn from consideration. However, applicant's product claims do not define over Sachan et al as considered alone, and in combination with the Japanese reference.

**Conclusion**

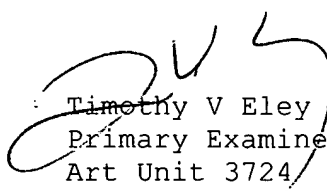
9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy V. Eley

Art Unit: 3724

whose telephone number is 571-272-4506. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Boyer D. Ashley can be reached on 571-272-4502. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Timothy V Eley  
Primary Examiner  
Art Unit 3724

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